

Mr. Lake H. Barrett, Acting Director  
 Office of Civilian Radioactive  
 Waste Management  
 U.S. Department of Energy  
 1000 Independence Avenue, SW  
 Washington, DC 20585

JUN 25 1993

89001899

Dear Mr. Barrett:

SUBJECT: TRANSMITTAL OF THE QUARTERLY PROGRESS REPORT ON THE PRE-LICENSING PHASE OF THE CIVILIAN HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT PROGRAM

Enclosed for your information is a copy of SECY-93-164, the "Quarterly Progress Report on the Pre-Licensing Phase of the U.S. Department of Energy's (DOE's) Civilian High-Level Radioactive Waste Management Program." The Nuclear Regulatory Commission staff prepares Quarterly Progress Reports in order to provide the Commission with an assessment of progress being made on key aspects of the NRC and the DOE pre-licensing consultation program. This report covers the period from January through March 1993.

If you have any questions, please contact me at (301) 504-3352, or Mr. Joseph Holonich, of my staff, at (301) 504-3387.

Sincerely, *RS* Robert F. Bernero *for*  
 Robert M. Bernero, Director  
 Office of Nuclear Material Safety  
 and Safeguards

Enclosure: As stated

- cc: R. Loux, State of Nevada
- T. J. Hickey, Nevada Legislative Committee
- C. Gertz, DOE/NV
- M. Murphy, Nye County, NV
- M. Baughman, Lincoln County, NV
- D. Bechtel, Clark County, NV
- D. Weigel, GAO
- P. Niedzielski-Eichner, Nye County, NV
- B. Mettam, Inyo County, CA
- V. Poe, Mineral County, NV
- F. Sperry, White Pine County, NV
- R. Williams, Lander County, NV
- L. Fiorenzi, Eureka County, NV
- L. Vaughan II, Esmeralda County, NV
- C. Schank, Churchill County, NV
- L. Bradshaw, Nye County, NV

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|------|--------------|---|----------|---|-----------|----------|---|
| OFC  | HLPD         | E | HLPD     | E | HLPD      | HLWM     | N |
| NAME | KKauffman/wd |   | RJohnson |   | JHolonich | JLinehan |   |
| DATE | 06/23/93     |   | 06/23/93 |   | 06/23/93  | 06/23/93 |   |
| OFC  | BYungblood   | N | NMSS     |   | NMSS      |          |   |
| NAME | BYungblood   |   | GArotto  |   | RBernero  |          |   |
| DATE | 06/23/93     |   | 06/23/93 |   | 06/25/93  |          |   |



June 10, 1993

**POLICY ISSUE**  
**(Information)**

SECY-93-164

**FOR:** The Commissioners

**FROM:** James M. Taylor  
Executive Director for Operations

**SUBJECT:** QUARTERLY PROGRESS REPORT ON THE PRE-LICENSING PHASE OF THE  
U.S. DEPARTMENT OF ENERGY'S CIVILIAN HIGH-LEVEL RADIOACTIVE  
WASTE MANAGEMENT PROGRAM

**PURPOSE:**

To provide the Commission with a Quarterly Progress Report (January through March 1993) on the pre-licensing phase of the U.S. Department of Energy's (DOE's) civilian high-level radioactive waste (HLW) management program.

**BACKGROUND:**

In the Quarterly Progress Report on the pre-licensing phase of DOE's program, the Nuclear Regulatory Commission staff discusses the key aspects of the NRC/DOE pre-licensing consultation program that deserve Commission attention. The previous Quarterly Progress Report, SECY-93-052, discussed activities that occurred from October through December 1992.

**EXECUTIVE SUMMARY:**

The most significant activities during this period were related to the areas of "DOE Implementation of Scheduled and Systematic Consultations," "Performance Assessment," and "Rulemaking and Regulatory Guidance Development."

Contact:  
Ken Kalman, NMSS  
504-2428

**NOTE:** TO BE MADE PUBLICLY AVAILABLE  
IN 10 WORKING DAYS FROM THE  
DATE OF THIS PAPER

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### DOE Implementation of Scheduled and Systematic Consultations

On March 22, 1993, the revised DOE/NRC "Level-of-Detail Agreement and Review Process for Study Plans" was finalized. This document was developed to make the requirements for content of study plans written by DOE scientists fit the need of the study and eliminate unneeded requirements. It is the result of several months of negotiations by NRC and DOE staffs, with input from the State of Nevada and affected units of local government.

### Performance Assessment

- o As directed by the Waste Isolation Pilot Plant (WIPP) Land Withdrawal Act of 1992, the U.S. Environmental Protection Agency (EPA) published proposed amendments to its standards for disposal of transuranic (TRU) waste and HLW at sites other than Yucca Mountain. In response, in SECY-93-073, "Comments on Proposed EPA Standards for TRU and HLW Disposal at Sites Other Than Yucca Mountain," dated March 23, 1993, the staff recommended comments to the Commission.
- o On February 11, 1993, EPA published an Advance Notice of Proposed Rulemaking (ANPR) indicating its intent to develop criteria to be used for certifying compliance with its TRU and HLW standards for the WIPP. NRC staff comments on EPA's ANPR were provided to EPA on March 22, 1993.

### Rulemaking and Regulatory Guidance Development

On March 25, 1993, the staff briefed the Advisory Committee on Nuclear Waste (ACNW) on the proposed 10 CFR Part 60 rulemaking: "Clarification of Assessment Requirements for the Siting Criteria and Performance Objectives." The ACNW endorsed issuance of the proposed rulemaking for public comment. The staff sent the proposed rulemaking package forward and anticipates that it will be provided to the Commission in June 1993.

### DISCUSSION:

#### 1. DOE Implementation of Scheduled and Systematic Consultations

There was only one interaction scheduled to take place with DOE during this reporting period which was a Yucca Mountain site visit originally scheduled for March 31, 1993. However, this site visit was postponed to May 25-26, 1993, to better enable the staff to see initial work on the Exploratory Studies Facility (ESF).

During this reporting period, the NRC On-site Representatives (ORs) observed many of the site activities related to DOE's site characterization program. They observed the excavation of the north portal of the ESF, which is a boxcut, into the east flank of Exile Hill that will serve as an entrance to the ESF main tunnel. The ORs also observed drilling and borehole logging activities along the ESF right-of-way as well as drilling and logging of shallow and deep boreholes to study the unsaturated and saturated zones. Consequently, the ORs were able to observe the successful completion of the

UZ-16 borehole by the LM-300 drill rig. The rig reached a depth of 1689 feet which was about 80 feet below the water table. In addition to these activities, the ORs also briefed DOE and DOE contractors at DOE's Yucca Mountain Site Characterization Project Office on the role of NRC and the ORs in the HLW management program.

During this reporting period, the staff continued to provide comments on DOE documents. On January 29, 1993, the staff provided comments to DOE on the September 30, 1992, version of the "Mined Geologic Disposal System Annotated Outline Skeleton Text for the Preparation of a License Application." Generally, the staff noted that the Annotated Outline was still preliminary and contained little data. However, specific comments were provided on DOE interpretation of requirements related to total system performance and unclear definitions and identifications in the chapter on "Land Ownership and Control." The staff suggested a format change, as well, to make changes in future iterations of the annotated outline easier to track.

The previous Quarterly Progress Report noted that the staff was reviewing two DOE Site Characterization Progress Reports, "Progress Report on Site Characterization: Yucca Mountain, Nevada, Number 6" and "Site Characterization Progress Report: Yucca Mountain, Nevada, Number 7." During this reporting period, the staff completed its review of the two reports and will be transmitting the results of its reviews, by letter to DOE, during the next reporting period. In response to NRC concerns with previous Progress Reports, DOE adopted a revised format for Progress Report Number 7. Because of this revision and information provided in this report, the staff believes the report to be responsive to many of the concerns noted in previous reviews of Progress Reports. However, the staff is particularly concerned that the reports still do not provide a clear picture of the status and results of certain site characterization activities such as design activities related to the ESF and waste package.

During this reporting period, DOE transmitted four new and six revised site characterization study plans for the staff's review. DOE requested that the staff expedite reviews of three of these study plans that deal with tests to be conducted at the ESF. The staff agreed and completed its review of eight study plans, during this reporting period, including one of the three study plans for which DOE had requested an expedited review. The staff expects to complete its expedited review of the remaining two study plans within the next reporting period.

On March 9, 1993, DOE also transmitted a topical report on "Evidence of Extreme Erosion During the Quaternary Period" and a draft technical report on the "Status of Volcanic Hazard Studies for the Yucca Mountain Site Characterization Project." A meeting to discuss the staff's approach to reviewing DOE topical reports will be held on May 3, 1993. Participants will also include the State of Nevada and representatives of affected units of local government. Following that meeting and finalization of the staff's review plan for topical reports, the staff will determine when to initiate a review of the topical report on extreme erosion. The staff is reviewing the draft technical report on volcanic hazard studies and a DOE/NRC technical exchange is scheduled for June 9, 1993, for the State of Nevada, NRC staff,

and affected units of local government to provide comments on the draft technical report.

The previous Quarterly Progress Report had noted that the staff and DOE were working toward finalizing the "Level-of-Detail Agreement and Review Process for Study Plans," which revises the May 7-8, 1986, Level-of-Detail Agreement. On March 22, 1993, the revised agreement was finalized. This document is the result of several months of negotiations by NRC and DOE staffs, with input from the State of Nevada and affected units of local government, in an effort to make the requirements for content of study plans written by DOE scientists fit the need of the study and to eliminate unneeded requirements.

In conjunction with the new Level-of-Detail Agreement, the NRC staff issued a revision to its "Review Plan for NRC Staff Review of DOE Study Plans, Revision 2" (SPRP) on March 10, 1993. All study plan reviews conducted after that date will conform to that revision. Revision 2 of the SPRP contains a major change from the previous review plan, as it no longer requires that staff complete two separate phases of review for study plans. The review approach presented in the revision allows for a single review in which the responsible technical lead would determine whether the study is acceptable for review, identify any objections, and, if needed, document any detailed technical concerns in the form of comments and questions. If warranted, the staff can transmit its detailed comments to DOE at a later date under separate cover. The revised review plan should expedite study plan reviews and significantly increase review efficiency. In keeping with Division of High-Level Waste Management internal quality assurance (QA) requirements, staff was trained in the use of the plan on March 10, 1993.

During this reporting period, there were no specific interactions between DOE and EPA on issues concerning mixed HLW or the Resource Conservation and Recovery Act.

## 2. Early Implementation of a QA Program

As discussed in the previous Quarterly Progress Report, DOE's Office of Civilian Radioactive Waste Management (OCRWM) presented a draft of its revised and consolidated Quality Assurance Requirements and Description Document (QARD) to the NRC staff on October 21, 1992. The NRC staff reviewed the draft and provided comments to OCRWM. Revision 0 of the QARD was issued to the NRC staff for review and acceptance on December 21, 1992. The NRC staff reviewed Revision 0 of the QARD, with particular emphasis on the changes made as a result of the NRC staff comments on the draft QARD, and provided comments to OCRWM by letter dated March 8, 1993. The QARD, Revision 0, continues to meet NRC requirements with the exception of four items. OCRWM has agreed to resolve two of these items, relating to computer software, in the next revision of the QARD. The other two items, involving commitments to annual audits for major program participants, and compliance with 10 CFR Parts 71 and 21, are still under discussion. The NRC staff comments on the draft QARD are not significant in terms of the overall OCRWM QA program and should not affect the overall quality of the site characterization activities. OCRWM has requested each affected organization, in its HLW repository program, to prepare a transition plan to implement Revision 0 of the QARD. Subsequent to

OCRWM acceptance of the transition plans, Revision 0 of the QARD will be implemented by the affected organizations.

Because implementation of Revision 0 of the OCRWM QARD will require revisions to the Management and Operating contractor (M&O) Quality Assurance Program Description (QAPD), the NRC staff notified OCRWM by letter dated February 24, 1993, that it will not review, in detail, Revision 3 of the M&O QAPD, which was submitted to the NRC staff for information on January 7, 1993. A full review of the M&O QAPD will be conducted when the revision consistent with Revision 0 of the QARD is issued. The NRC staff observed OCRWM QA audits of the M&O activities in Vienna, Virginia, and Las Vegas, Nevada, as well as a QA surveillance of the M&O in Las Vegas, Nevada, during this period. As a result of these audits and surveillance, no findings were identified that would preclude DOE from continuing with site characterization or other quality affecting activities. As stated in the previous Quarterly Progress Report, the staff maintained its policy of reviewing the M&O QA program to the same extent as other major program participants.

During this reporting period, NRC staff supported by QA staff from the Center for Nuclear Waste Regulatory Analyses (CNWRA) also observed OCRWM QA audits and surveillances of the U.S. Geological Survey, the DOE Vitrification Projects Division, and the Technical and Management Support Services contractor, as well as a DOE Vitrification Projects Division QA audit of the West Valley Demonstration Project. No findings were identified that would preclude DOE from continuing with site characterization or other quality affecting activities.

A periodic DOE/NRC QA meeting was held on January 26, 1993, to discuss items of mutual interest. The meeting was attended by a representative of Senator Reid's office, and a representative of the State of Nevada participated by telephone. Topics discussed included an update on the status of implementing the new QARD and a clarification of the technical specialist role on audits.

### 3. Performance Assessment

Late in 1992, the WIPP Land Withdrawal Act of 1992 was enacted. Among other things, that law reinstated, for facilities other than Yucca Mountain, most of EPA's standards for disposal of TRU waste and HLW. The law also directed EPA to amend those portions of its standards that were found deficient in a 1987 Federal court decision. On February 10, 1993, EPA published proposed amendments for public comment. SECY-93-073, "Comments on Proposed EPA Standards for TRU and HLW Disposal at Sites Other Than Yucca Mountain," dated March 23, 1993, recommended, to the Commission several comments on the 10,000-year period for application of the standards, the level of protection provided by the proposed individual protection requirements, the level of contamination permitted by the groundwater protection requirements, and the technical support analyses provided in EPA's Background Information Document.

On February 11, 1993, EPA published an ANPR indicating its intent to develop criteria to be used for certifying compliance with EPA's TRU and HLW standards for WIPP. The ANPR solicited comments on several subjects, including the appropriate "degree of confidence" for determining compliance with EPA's

standards and the types of models that might be used to project the performance of the WIPP facility. NRC staff comments on EPA's ANPR were provided to EPA on March 22, 1993.

On January 12, 1993, both NRC and CNWRA staff attended, at the invitation of DOE, a tour of the WIPP facility. On January 13, 1993, they observed a round table discussion on Performance Assessment for the WIPP and the Yucca Mountain projects, held in Albuquerque, New Mexico. The WIPP facility, located near Carlsbad, New Mexico, is a research and development project of DOE, designed to demonstrate the safe disposal of transuranic radioactive wastes. The site tour included presentations on the applicable legislative acts (e.g., the WIPP Land Withdrawal Act of 1992), the testing program at WIPP, and visits to both the underground test areas and the waste handling building.

The purpose of the round table discussion was to facilitate communication, at the management level, between DOE staff involved in the WIPP and Yucca Mountain projects in the area of overall system performance assessment. Because both programs are concerned with demonstrating compliance with the EPA HLW standards, such interactions provide an opportunity to exchange information, particularly in regards to the methodologies employed and the lessons learned in addressing the prediction of long-term overall repository system performance. Presentations were made on the programmatic roles, the technical framework, and the status of performance assessment activities for the respective projects. Although it was evident to the NRC staff that a level of communication does exist, it did not appear that DOE was making full use of the potential of such interactions in addressing similar concerns in the area of performance assessment.

#### 4. Early Resolution of State and Tribal Concerns

In a February 5, 1993, letter, the staff responded to a September 4, 1992, letter from Nye County, Nevada, regarding issue resolution in the HLW repository program. In its response, the staff reiterated its basic position on issue resolution during the prelicensing phase of the repository program (i.e., issue resolution during pre-licensing means that the staff has no further questions at a particular point in time). The staff also repeated that it has both a right and a responsibility to reopen any issue, or to request further information on any issue, at any time during the pre-licensing period, when warranted by new information or analysis. The staff's letter also responded to a Nye County concern that regulatory flexibility is needed and may be reduced by reducing regulatory uncertainties, stating that it supports such flexibility, but does not believe that the process of reducing regulatory uncertainties, in 10 CFR Part 60, in any way reduces such flexibility.

The staff continued to maintain an open and cooperative relationship with affected parties. During this reporting period, the staff met on March 3, 1993, with members of Inyo County, California and the Nevada Legislative Counsel Bureau to discuss various facets of the HLW program, including NRC's regulatory responsibilities. These representatives were in attendance at the Nuclear Waste Technical Review Board meeting with the Commission that same day.

The staff also met with Nye County, Nevada, representatives on March 31, 1993, to generally discuss NRC's HLW program responsibilities and status. Topics for discussion included, but were not limited to: issue resolution process and NRC's approach to reduction of regulatory uncertainty; issues involved in the Energy Policy Act, Section 801 study by the National Academy of Sciences; Licensing Support System development; DOE's evaluation of phased licensing; and Nye County's role in the prelicensing and licensing processes.

#### 5. Rulemaking and Regulatory Guidance Development

In March 1993, the staff announced the availability of a draft Staff Technical Position (STP) on "Consideration of Fault Displacement Hazards in Geologic Repository Design," for public comment, in the *Federal Register*. This STP addresses those situations in which geologic faults of regulatory concern exist, or are assumed to exist, at the location of systems, structures, and components important to safety or important to waste isolation. Specifically, the STP recognizes the acceptability of designing the geologic repository to take into account the attendant effects (e.g., displacement) of faults of regulatory concern, and expresses the staff's views on what is needed, from DOE, if DOE chooses to locate structures, systems, and components important to safety or important to waste isolation in areas that contain faults with Quaternary-age displacement. The STP also notes that DOE should seek early resolution, at the staff level, of fault-related design and performance issues, before submitting a license application to construct and operate a geologic repository. The public comment period for this STP ends in June 1993.

On March 25, 1993, the staff briefed the ACNW on the proposed 10 CFR Part 60 rulemaking: "Clarification of Assessment Requirements for the Siting Criteria and Performance Objectives." In a letter to the Executive Director for Operations, dated March 31, 1993, Dade W. Moeller, Chairman of the ACNW, stated that the ACNW believed that "...the NMSS staff has prepared the proposed rulemaking in a competent manner. We endorse issuance of the proposed rulemaking for public comment." Subsequently, the staff sent the proposed rulemaking package forward and anticipates that it will be provided to the Commission in June 1993.

#### 6. MRS

During this reporting period, the staff did not have any significant interactions with DOE on MRS siting or licensing issues. Staff expected a revision to the "Monitored Retrievable Storage Facility Annotated Outline Skeleton Text for the Preparation of a License Application" (MRS AO) in February 1993. However, the staff now understands that the next MRS AO revision is expected in June 1993 and that this will be the last revision until a site is identified.

As noted in previous Quarterly Progress Reports, a number of groups have expressed interest in hosting an MRS site and have applied for, and received grants, from DOE to study the feasibility of hosting an MRS. The application deadline for Phase II grants expired on March 31, 1993. The following is a list of Phase II grant applicants.



1. Mescalero Apache Tribe, New Mexico  
Applied on March 13, 1992  
Awarded April 21, 1992
2. Skull Valley Band of Goshute Indians, Utah  
Applied October 28, 1992  
Grant awarded on January 27, 1993
3. Ft. McDermitt Paiute Shoshone Tribe, Nevada  
Applied on February 19, 1993
4. Ponca Industrial Corporation, Texas  
Tonkawa Tribe of Oklahoma  
Applied on March 31, 1993
5. Eastern Shawnee Tribe of Oklahoma  
Applied on March 24, 1993
6. Prairie Island Indian Community, Minnesota  
Applied on March 30, 1993
7. Ute Mountain Ute Tribe, Colorado  
Applied on March 30, 1993
8. Miami Tribe of Oklahoma  
Applied on March 30, 1993
9. Northern Arapahoe Economic Development Commission, Wyoming  
Applied on March 26, 1993

7. Spent Fuel Storage and Transportation System Compatibility

The Sacramento Municipal Utility District (SMUD) has selected the standardized NUHOMS-24P spent fuel storage design as part of a DOE cooperative program to demonstrate the licensing of a dual-purpose storage/transport system for its Rancho Seco independent spent fuel storage installation. During this period, Pacific Nuclear (NUHOMS-24P vendor) met several times with the staff to conduct pre-application discussions about its transportation cask design. Pacific Nuclear and SMUD expect to submit the application for transportation cask certification and a revised 10 CFR Part 72 spent fuel storage application this summer.

Staff continues to review Nuclear Assurance Corporation's (NAC's) applications for transportation and storage approvals for its NAC STC, dual-purpose, storage and transport cask. Staff met several times during this period to discuss potential design changes to the cask basket.

As noted in greater detail in the last Quarterly Progress Report, Virginia Power (VP) submitted a proposal to DOE for the development of a Universal Container System (UCS), an integrated systems approach to spent nuclear fuel storage, transportation, and disposal. In March 1993, VP briefed the staff on its UCS proposal to DOE. VP's proposal is to design, construct prototypes,

license and demonstrate the UCS, in a cooperative agreement with DOE, with the goal of delivering 60 units for storage, to utilities, by January 1998. The UCS consists of a sealed inner metal container (IMC) with separate overpacks for storage, transportation, and disposal. Phase I (1993-1994) of VP's proposal calls for the preparation of designs for the IMC, storage and transportation overpacks, and the safety analysis reports. Phase II (1995-1996) would consist of the licensing reviews, fabrication of six IMCs, and testing of overpack prototypes to be used for storage, transport, and disposal. In 1997, VP proposes to conduct transportation system and licensed storage demonstrations. Phase III (1997-1998) would consist of fabrication of 60 IMCs for delivery to utilities for storage and production of transportation overpacks, based on DOE needs for 1998.

#### 8. Transportation

There have been no significant developments in transportation during this reporting period other than those discussed in Item 7 of this Quarterly Progress Report.

#### 9. Research

On January 25-28, 1993, the staff, in conjunction with CNWRA and the University of Arizona, hosted Workshop VI on Unsaturated-Zone Flow and Transport in Fractured Rocks in Tucson, Arizona. This workshop was the sixth in a series held in Tucson bringing together experts on unsaturated-zone hydrogeology to discuss current research work in the area. NRC and DOE staff and contractors, personnel from other organizations, and a representative from the State of Nevada attended the workshop. The emphasis of this workshop was on site characterization techniques. NRC and its contractors made presentations on recent research at the Apache Leap Tuff Site in Arizona and on recent hydrogeological research done at CNWRA. DOE and its contractors made presentations on Yucca Mountain site characterization methods. During one of the evenings of the workshop, NRC and DOE participants in INTRAVAL, an international transport model validation effort involving both agencies, met to discuss INTRAVAL test cases that both agencies are working on. On the afternoon after the workshop, NRC, CNWRA, and the University of Arizona had one of a continuing series of meetings on the coordination of NRC-supported hydrogeological research between CNWRA and the University of Arizona.

#### 10. Nuclear Waste Negotiator

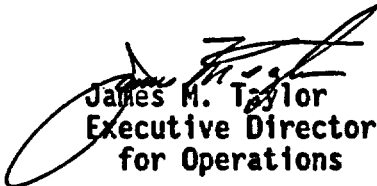
During this reporting period, NRC continued to support the Office of the U.S. Nuclear Waste Negotiator by responding to requests for information and meetings with interested parties to explain NRC's regulatory responsibilities. In addition, interaction continued under the Federal Liaison Program. Under this program input from the Negotiator was requested and obtained for the rulemaking on "Emergency Preparedness Licensing Regulations for Independent Spent Fuel Storage (ISFSI) and Monitored Retrievable Storage Facilities (MRS)."

**CONCLUSIONS:**

During this reporting period, NRC and DOE continued to make progress in addressing and working toward resolving issues at the staff level. In March 1993, the "Level-of-Detail Agreement and Review Process for Study Plans" was finalized. This culminates negotiations on this topic between NRC and DOE staff with input from the State of Nevada and affected units of local government.

**COORDINATION:**

The Office of the General Counsel has reviewed this paper and has no legal objection.

  
James M. Taylor  
Executive Director  
for Operations

**DISTRIBUTION:**

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